Aliso: A Journal of Systematic and Evolutionary Botany

Volume 7 | Issue 3 Article 3

1971

Two New Species of Dandya (Liliaceae) from Mexico and a Reexamination of Bessera and Behria

Lee W. Lenz
Rancho Santa Ana Botanic Garden

ALISO

VOL. 7, No. 3, pp. 313-320 APRIL 22, 1971

TWO NEW SPECIES OF *DANDYA* (LILIACEAE) FROM MEXICO AND A REEXAMINATION OF *BESSERA* AND *BEHRIA*

LEE W. LENZ

Rancho Santa Ana Botanic Garden
Claremont, California 91711

The genus *Dandya* was created in 1953 by H. E. Moore, Jr., for a plant collected in Coahuila, Mexico, in 1910 by Purpus and described by Brandegee (1911) as *Muilla purpusii*. Later Macbride (1918), without comment, transferred it to *Bloomeria*, as *B. purpusii* (Brandegee) Macbride. Ingram (1953) noted that it could not be a *Muilla* as it has jointed pedicels, nor could it be a *Bloomeria* as it has the perianth-segments united into a short tube. On the basis of a nonstipitate ovary he placed it in *Brodiaea*, as *B. purpusii* (Brandegee) Ingram. Moore (1953), noting particularly the difference in the corm tunics between the Purpus specimen and those of *Brodiaea*, as well as the fact that *Brodiaea, sensu stricto*, has three stamens whereas *B. purpusii* has six, concluded that the Purpus plant was generically distinct and was in fact most closely related to *Bessera* of the Mexican *Milla* complex. *Dandya purpusii* (Brandegee) Moore is known only from the original collection made in the Sierra de la Paila of Coahuila, an area that is nearly inaccessible by ordinary means of transportation, and all efforts to recollect the species have failed (Howard, pers. com.). In recent years T. M. Howard of San Antonio, Texas, has collected extensively in Mexico and has discovered a number of apparently new species, two of which, on superficial examination, appear referable to *Dandya*.

According to Moore, the stamens of *Dandya* are "inserted at the throat of the tube, the filaments adnate to the perianth-tube below, subulate and free above. . . ." An examination of living material of the two Howard collections clearly showed that the filaments were united near the base by a thin membrane to form a shallow cup. The holotype of *Dandya purpusii* (*Purpus 4959*, UC) presents minimal material for study, however one nearly open bud was softened and carefully examined under a dissecting microscope. As far as I was able to determine there appears to be a thin membrane connecting the bases of the filaments to form a shallow ring. An examination of the isotype at the Gray Herbarium, a flower of which has been dissected and mounted on a small piece of paper, shows the cup more clearly than does the holotype.

On the basis of the presence of a staminal cup, the Purpus and Howard collections would, according to Moore's treatment, be placed in *Bessera*, a genus recognized by him as containing two rather divergent species: *Bes-*

sera elegans Schult. f. with a perianth-tube shorter than, to equalling the segments, and with a staminal tube ¼–½ the length of the stamens, and *B. tenuiflora* (Greene) Macbride with a perianth-tube four or more times the length of the segments and with the stamens united at the base into a very shallow cup. The two Howard collections and *Dandya purpusii* appear to be much more closely related to each other than they do to *Bessera* (*sensu* Moore), and on the basis of present information it seems desirable to emend the original description of *Dandya*.

Dandya, H. E. Moore, Jr. (Gentes Herb. 8: 266, 1953), emend. Lenz

"Stamens 6, inserted at the throat of the tube, the filaments adnate to the perianth-tube below," (delete) "subulate and free above," (add) filaments united near the base to form a shallow cup. Also change the wording, "flowers several, erect," (add) or nodding . . . "blue" (add) lavender or white.

The plants from southern Baja California have often been placed in the monotypic genus *Behria* (Greene, 1886; Krause, 1930; Shreve & Wiggins, 1964). With its long tubular scarlet-red and yellow flowers, *Behria* is adapted to hummingbird pollination and holds the same position in its complex as does *Dichelostemma ida-maia* (Wood) Greene in the *Brodiaea* complex.

On the basis of a study of living material of all the taxa with the exception of *D. purpusii*, I propose the following alignment of species as best representing the evolutionary development of the group.

KEY TO GENERA TREATED

1. Perianth-tube four or more times as long as the segments, more or less saccate at base; stamen filaments united at the base into a shallow cup 0.5–1 mm high. *Behria*

1. Perianth-tube shorter than, or equalling the segments, not saccate at the base.
   2. Perianth-tube 0.5–1.3 cm long, stamens exceeding the perianth segments, filaments united by a thin membrane into a tube ¼–½ the length of the stamen. *Bessera*

   2. Perianth-tube about 1 mm long, not exceeding the perianth segments; filaments united at the base to form a shallow cup. *Dandya*

Dandya thadhowardii sp. nov.

(Fig. 1)

Perennial herb from a corm with one or more scapes and 8–12 leaves: corm 1.5–3 cm in diam with membranous tunics, leaves 8–12 linear, elongate, prominently keeled below, channeled above, dull dark green, reddish brown at base, at first semierect, later becoming arcuate or semiprostrate, 25–30

Fig. 1. *Dandya thadhowardii* Lenz.—a. Habit, ×0.5.—b. Flower arrangement of stamens, ×2.—c. Stamens showing fusion of filaments near the base to form a shallow cup, ×2.


c
b
a
JRJ

cm long and 2–3 mm wide; scape to 40 cm high, wiry, smooth; spathe bracts 5–10 mm long, linear-lanceolate, withered at anthesis; umbel 5–20-flowered; flowers white, nodding, slightly fragrant, opening in the morning and closing in late afternoon or the following day; pedicels 15–20 mm long; perianth tube about 1 mm long; perianth segments 1 cm long and 0.5 mm wide at base, ovate, the inner segments obtuse, outer subacute, creamy white with a faintly greenish mid-nerve and greenish at the base, outer segments strongly reflexed, inner segments slightly reflexed; stamens six, filaments white, 6–7 mm long, bowed from the base; anthers 4 mm long, yellow, firmly held around style; style 7 mm long, longer than stamens; $2n=18$.

Herbae perennes de cormo, cormis 1.5–3 cm diam, membranaceo-tunicatis; folia 8–12, linearia plano-convexa, atrovirentia, brunnea ad basem, semierecta initio, postea arcuata vel semiprostrata, 25–30 cm longa, 2–3 mm lata; scapi 40 cm alti, glabri; bracteae 5–10 mm longae, lanceolatae, ad anthesem marcidae; umbellae de 5–20 floribus, flores candidi, nutantes; pedicelli 15–20 mm longi; perianthii segmenta 1 cm longa, 5 mm lata, ovata, segmentum externum obtusum, segmenta interiora subacuta, lactae, ad basi viridia, costae virides, segmentum externum valde reflexum, segmenta interiora leviter reflexa; stamina 6, filamentis altis, 6–7 mm longis, e basi arcuatis; antherae 4 mm longae, luteae, stylum prementes; stylus 7 mm longus, stamina excedens.

Type.—Mexico: State of Guerrero. About 25–30 miles south of Iguala, on hillsides in calcareous soil, at km 216 on Mexico 95. In large colonies under thorny shrubs and giant cacti (*Neobuxbaumia tetetzo*) in part shade and full sun. Collected in leaf, July 1964, 1965, 1966; collected in flower after good rains July 3, 1964. *Howard 64–74.* (RSA 100784, holotype.)

Other collection.—About 1 mile from Coyuca de Catalan (on the way to Placeres del Oro. *T. M. Howard* s. n., 1968.

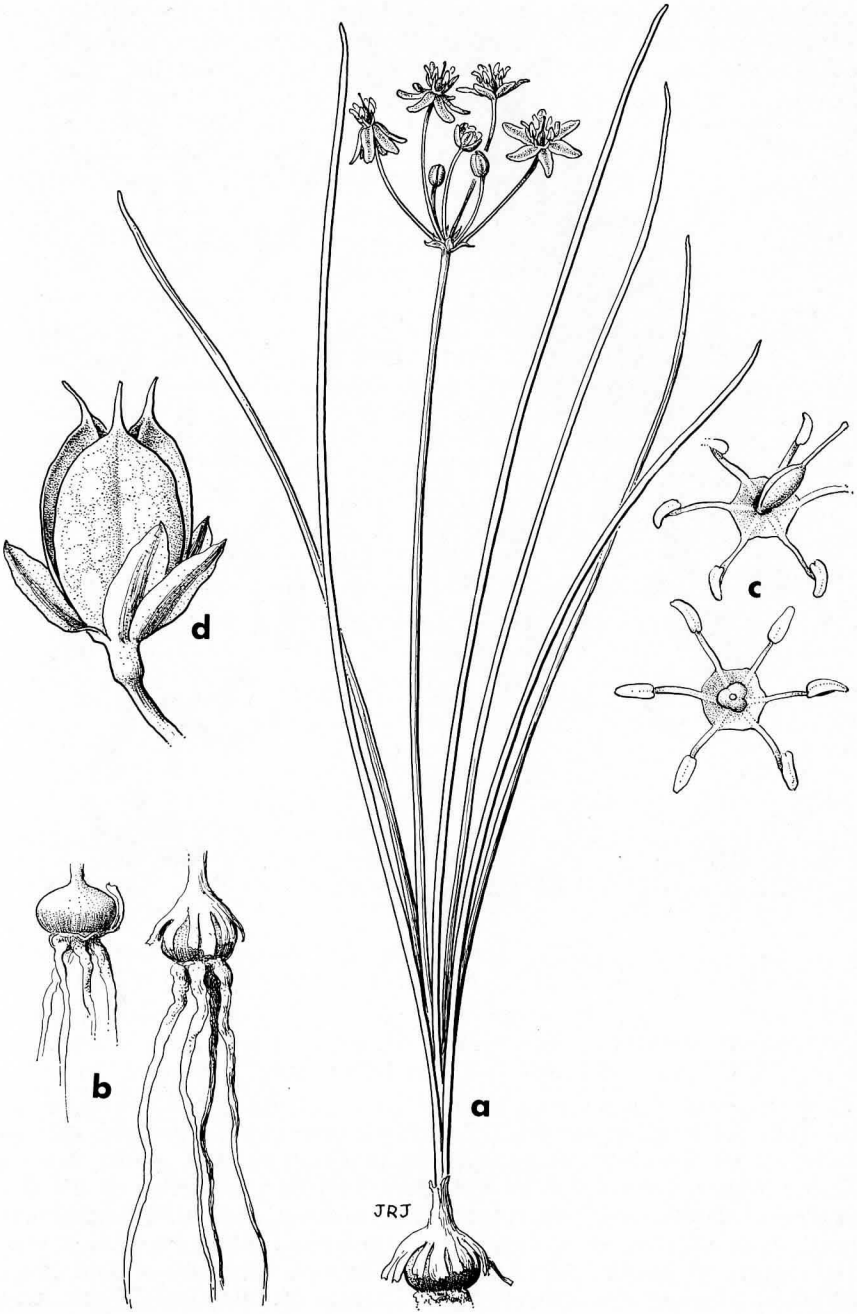
It gives me great pleasure to name this attractive little plant in honor of Thad Howard who first detected it and who has tried unsuccessfully on numerous occasions to recollect *Dandya purpusii.*

Dandya hannibalii sp. nov.

(Fig. 2)

Perennial herb with one or more scapes and 5–6 leaves from a corm: corm 1.5–2 cm in diam, tunics brown, membranous, the outer of minute parallel fibers; leaves grassy, semierect, narrowly linear, subterete or faintly concave, dark green, to 35 cm long and 2 mm wide; scape 24–24 cm high, smooth; spathe bracts 5–7 mm long, linear, withered at anthesis; umbel 5–6 flowered; flowers fragrant upright, lavender-blue; pedicels to 3 cm long; perianth tube very short; perianth segments to 1 cm long and 3–4 mm wide, elliptic, spreading, sometimes slightly reflexed; stamens six, spreading or

Fig. 2. *Dandya hannibalii* Lenz.—a. Habit, ×0.5.—b. Corms, ×0.5.—c. Stamens showing fusion of lower portion of the filaments to form a shallow cup, ×2.—d. Capsule, ×2.


d
c
b
a
JRJ

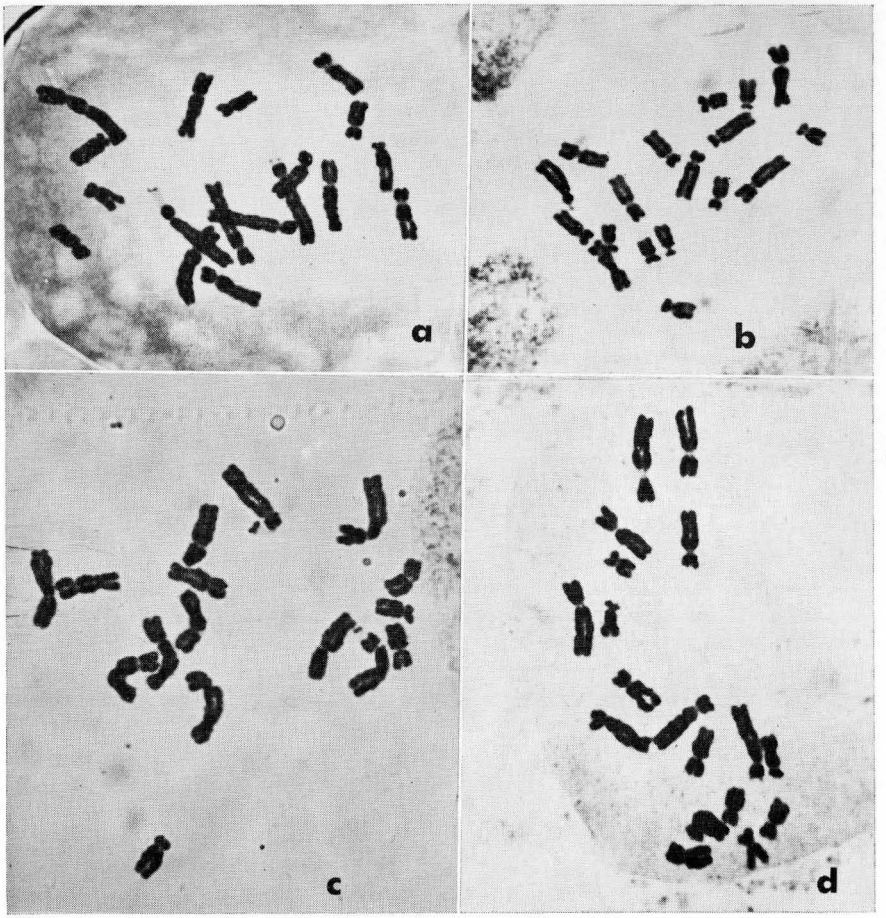


Fig. 3. Chromosomes.—a. *Dandya thadhowardii* Lenz; $2n=18$.—b. *Dandya hannibalii* Lenz; $2n=18$.—c. *Bessera elegans* Schult. f.; $2n=16$.—d. *Behria tenuiflora* Greene; $2n=18$.

only slightly incurved, anthers yellow filaments 4 mm long; ovary 2 mm long, style 4–5 mm long, capsule about 1.5 cm long. $2n=18$.

Herbae perennes de cormo, cormis 1.5–2 cm diam, membranaceo-tunicatis; folia 5–6 tenus 35 cm longa, 2 mm lata, erecta vel semierecta, subulata, teretia vel semiconcava, atrovirentia; scapi 20–26 cm alti, glabri; bracteae 5–7 mm longae, lanceolatae, ad anthesem marcidae; umbellae de 5–6 floribus, flores erecti, caesii; pedicelli tenus 3 cm longi; perianthii tubus brevissimus, segmenta tenus 1 cm longa, 3–4 mm lata, elliptica, expansa; stamina 6, expansa, vel leviter inflexa; antherae luteae; filamentis 4 mm longis; ovarium 2 mm longum; stylus 4–5 mm longus; capsula circa 1.5 cm longa.

Type.—Mexico. State of Michoacan, about 10 miles south of Cuatro Caminos, at km 165, Mexico 37, on northwestern slopes of Sierra Madre. Dry rocky hillsides facing west, in gritty red soil. A few still in flower July 31, 1967, but all showing signs of going dormant. Growing in full sun and very light shade near giant cacti, in short grass. Not abundant where found and always growing singly rather than in clumps. July 31, 1967 *T. M. Howard 67–64.* (RSA 190791, holotype.)

I take great pleasure in naming this plant in honor of Les Hannibal of Fair Oaks, California, a long-time student, successful grower and hybridizer of Amaryllidaceae. He was also present at the time this species was discovered.

Morphologically, *D. hannibalii* resembles *D. purpusii,* differing primarily in the length of the perianth tube, which is given as 2–3 mm for *purpusii* and 1 mm in *hannibalii,* as well as the greater length of the pedicels and perianth segments. These differences could be the result of environmental influences. Geographically, the two are widely separated, *D. purpusii* in Coahuila and *D. hannibalii* in Michoacan. Differences in date of flowering could be the result of variation in seasonal rains.

Since *D. purpusii* is known only from a single collection consisting of plants with rather poorly preserved flowers it seems desirable to describe the material from Michoacan as new pending the rediscovery of *D. purpusii.*

CHROMOSOME NUMBERS

TAXON	*n*	*2n*	LOCALITY
Behria tenuiflora Greene		18	Mexico, Baja California: 3 km south of Pichlingue ferryboat landing, ca. 14 km north of La Paz, 8 Feb., 1966, *Henrickson 2172.*
Bessera elegans Schult. f.		16	Mexico, Jalisco: outside of Guadalajara, along rim of the Rio Santiago, elev. 5000 ft, July, 1964, *T. Pray* s.n.
		16	Mexico, Colima: hwy 15 south of Colima at km 241–242, 30 July, 1967, *T. M. Howard 67–53A.* Purple form on limestone.
		16	Mexico, Jalisco: hwy 90 near Ocatlán, August, 1953, *L. W. Lenz 1201.*
Dandya hannibalii Lenz		18	Mexico, Michoacan: ca. 10 miles south of Cuatro Caminos at km 165, hwy 37, 31 July, 1967, *T. M. Howard 67–64.*
Dandya thadhowardii Lenz		18	Mexico, Guerrero: ca. 25–30 miles south of Iguala, km 216, hwy 95, 3 July, 1964, *T. M. Howard 64–74.*

ACKNOWLEDGMENTS

I would like to express my sincere appreciation to Hal Moore, Bailey Hortorium, for his help in interpreting the details of the flowers of *Dandya purpusii* the specimens of which offer very little in the way of material for critical examination. I also want to thank Dr. Philip A. Munz for help with

the Latin descriptions. I particularly want to express my gratitude to Thad Howard who not only discovered the two species described here but who also supplied me with living material for study as well as detailed notes on their habitats. Mrs. Carl F. Janish, Las Vegas, Nevada, prepared the illustrations.

LITERATURE CITED

Brandegee, T. S. 1911. Plantae Mexicanae Purpusianae III. Univ. Calif. Publ. Bot. 4: 177–194.

Greene, E. L. 1887. Genera confused under *Brodiaea*. Bull. Calif. Acad. Sci. 2: 125–144.

Ingram, J. 1953. A monograph of the genera *Bloomeria* and *Muilla* (Liliaceae). Madroño 12: 19–27.

Krause, K. 1930. Liliaceae. *In* A. Engler and K. Prantl. Die natürlichen Pflanzenfamilien, 2 Auflage. 15a: 227–386. Wilhelm Englemann, Leipzig. (p. 324.)

Macbride, J. F. 1918. Further new or interesting Liliaceae. Contr. Gray Herb. ser. 2, no. 56: 1–20.

Moore, H. E., Jr. 1953. The genus *Milla* (Amaryllidaceae—Allieae) and its allies. Gentes Herb. 13: 263–294.

Shreve, F., and I. L. Wiggins. 1964. Vegetation and flora of the Sonoran Desert. Vol. 1. Stanford Univ. Press, Stanford, Calif. 840 p.